I claim:

1. A peptide immunogen of about 20 to 100 amino acids long comprising:

   (i) a helper T cell (Th) epitope selected from the group consisting of SEQ ID Nos: 1 to 64;

   (ii) an N-terminal fragment of $A\beta_{1-42}$ peptide, SEQ ID NO:65, consisting of from 10 to 28 amino acid residues wherein each fragment comprises amino acid residue 1 of the $A\beta_{1-42}$ peptide or an immunologically functional analog of the N-teminal fragment of $A\beta_{1-42}$ peptide; and

   (iii) optionally a spacer consisting of at least an amino acid to separate the immunogenic domains.

2. A peptide immunogen of claim 1, wherein the spacer is selected from the group consisting of an amino acid, Gly-Gly, (α, ε-N)-Lys, and Pro-Pro-Xaa-Pro-Xaa-Pro (SEQ ID NO:73).

3. A peptide immunogen of claim 2, wherein the spacer is Gly-Gly.

4. A peptide immunogen of claim 2, wherein the spacer is ε-N-Lys.

5. A peptide immunogen of claim 1, wherein the N-terminal fragment of $A\beta_{1-42}$ peptide is selected from the group consisting of SEQ ID NOs: 66-69 and an immunologically functional analog thereof.

6. A peptide immunogen of any one of claims 2, 3, or 4, wherein the N-terminal fragment of $A\beta_{1-42}$ peptide is selected from the group consisting of SEQ ID NOs: 66-69 and an immunologically functional analog thereof.

7. A peptide immunogen of claim 1, wherein Th is selected from the group consisting of SEQ ID NOs: 1, 3, 4, 5, 6, 7, 8, 9, 20, 38-40, 47-51 and 52-54.

8. A peptide immunogen of any one of claims 2, 3, or 4, wherein Th is selected from the group consisting of SEQ ID NOs: 1, 3, 4, 5, 6, 7, 8, 9, 20, 38-40, 47-51 and 52-54..

9. A peptide immunogen selected from the group consisting of SEQ ID NOs: 70, 71, 72, 73, and 74.

10. A peptide immunogen of claim 9 consisting of SEQ ID NO: 73.

11. A peptide immunogen of claim 9 consisting of SEQ ID NO: 74.

12. The peptide immunogen represented by one of the following formulae:

$(A)_n$-(N-terminal fragment of $A\beta_{1-42}$ peptide)-$(B)_o$-$(Th)_m$-X;or

$(A)_n$-$(Th)_m$-$(B)_o$-(N-terminal fragment of $A\beta_{1-42}$ peptide)-X;

wherein

each A is independently an amino acid;

each B is a linking group selected from the group consisting of an amino acid, gly-gly, (α, ε-N)-Lys, and Pro-Pro-Xaa-Pro-Xaa-Pro (SEQ ID NO:73);

Th comprise an amino acid sequence that constitutes a helper T cell epitope, selected from the group consisting of SEQ ID NOs: 1-64 and an immune enhancing analog thereof;

(N-terminal fragment of $A\beta_{1-42}$ peptide) is 10 to about 28 amino acid residues and wherein each fragment comprises EFRH of the $A\beta_{1-42}$ peptide and immunologically functional analog thereof;

X is an α-COOH or α-$CONH_2$ of an amino acid ;

n is from 0 to about 10;
m is from 1 to about 4; and
o is from 0 to about 10.

13. A peptide immunogen of claim 12, wherein the spacer is Gly-Gly.

14. A peptide immunogen of claim 12, wherein the spacer is ε-N-Lys.

15. A peptide immunogen of claim 12, wherein the N-terminal fragment of $A\beta_{1-42}$ peptide is selected from the group consisting of SEQ ID NOs: 66-69 and an immunologically effective analog thereof.

16. A peptide immunogen of any one of claims 13, or 14 , wherein the N-terminal fragment of $A\beta_{1-42}$ peptide is selected from the group consisting of SEQ ID NOs: 66-69 and an immunologically functional analog thereof

17. A peptide immunogen of claim 12, wherein Th is selected from the group consisting of SEQ ID NOs: 1, 3, 4, 5, 6, 7, 8, 9, 20, 38-40, 47-51 and 52-54..

18. A peptide immunogen of any one of claims 13, or 14 wherein Th is selected from the group consisting of SEQ ID NOs: 1, 3, 4, 5, 6, 7, 8, 9, 20, 38-40, 47-51 and 52-54.

19. A peptide immunogen of claim 15 wherein Th is selected from the group consisting of SEQ ID NOs: 1, 3, 4, 5, 6, 7, 8, 9, 20, 38-40, 47-51 and 52-54.

20. A peptide immunogen of claim 16 wherein Th is selected from the group consisting of SEQ ID NOs: 1, 3, 4, 5, 6, 7, 8, 9, 20, 38-40, 47-51 and 52-54.

21. A composition comprising a pepetide immunogen of claim 1 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

22. A composition comprising a pepetide immunogen of claim 2 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

23. A composition comprising a pepetide immunogen of claim 3 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

24. A composition comprising a pepetide immunogen of claim 4 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

25. A composition comprising a pepetide immunogen of claim 5 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

26. A composition comprising a pepetide immunogen of claim 6 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

27. A composition comprising a pepetide immunogen of claim 7 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

28. A composition comprising a pepetide immunogen of claim 8 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

29. A composition comprising a pepetide immunogen of claim 9 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

30. A composition comprising a pepetide immunogen of claim 10 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

31. A composition comprising a pepetide immunogen of claim 11 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

32. A composition comprising a pepetide immunogen of claim 12 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720

33. A composition comprising a pepetide immunogen of claim 13 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

34. A composition comprising a pepetide immunogen of claim 14 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

35. A composition comprising a pepetide immunogen of claim 15 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

36. A composition comprising a pepetide immunogen of claim 16 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

37. A composition comprising a pepetide immunogen of claim 17 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

38. A composition comprising a pepetide immunogen of claim 18 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

39. A composition comprising a pepetide immunogen of claim 19 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

40. A composition comprising a pepetide immunogen of claim 20 and a pharmaceutically acceptable adjuvant and/or carrier selected from the group consisting of alum, liposyn, saponin, squalene, L121, emulsigen monophosphyryl lipid A (MPL), polysorbate 80, QS21, Montanide ISA51, ISA35, ISA206 and ISA 720.

41. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 21.

42. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 22.

43. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 23.

44. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 24.

45. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 25.

46. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 26.

47. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 27.

48. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 28.

49. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 29.

50. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 30.

51. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 31.

52. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 32.

53. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 33.

54. A method of preventing Alzheimer's disease by administrating to a mammal a composition of claim 34.

55. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 35.

56. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 36.

57. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 37.

58. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 38.

59. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 39.

60. A method of preventing or treating Alzheimer's disease by administrating to a mammal a composition of claim 40.

61. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 21.

62. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 22.

63. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 23.

64. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 24.

65. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 25.

66. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 26.

67. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 27.

68. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 28.

69. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 29.

70. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 30.

71. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 31.

72. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 32.

73. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 33.

74. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 34.

75. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 35.

76. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 36.

77. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 37.

78. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 38.

79. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 39.

80. A method of producing antibodies to $A\beta_{1-42}$ peptide that is cross reactive to soluble Aβ peptides and brain tissue plaques formed therefrom by administering a composition of claim 40.